ORDER NO. GAD8605553C8

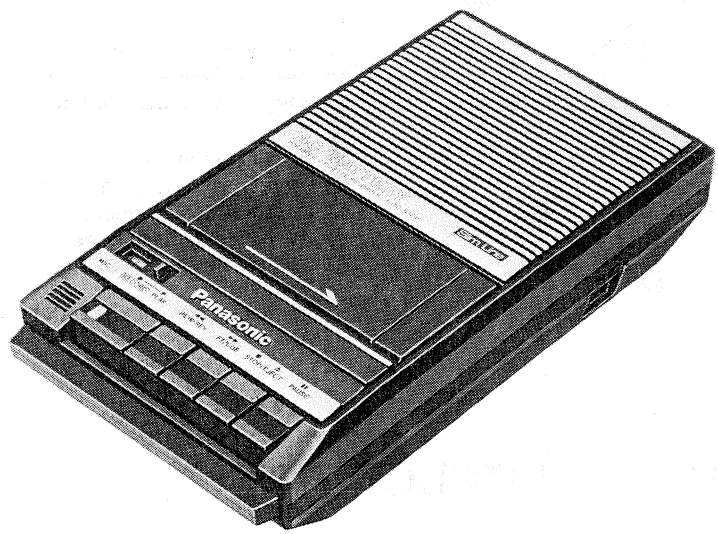
Service Manual

Portable Cassette

RQ-2104

(Black)

Portable Cassette Tape Recorder



This is the Service Manual for the following areas.

[Z] ··· For all European areas except United Kingdom and F.R. Germany.

[E] ··· For United Kingdom.

[X] ··· For Asia, Latin America, Middle East and Africa areas.

[L] ··· For Australia.

RQ-2745 MECHANISM SERIES

■ SPECIFICATIONS

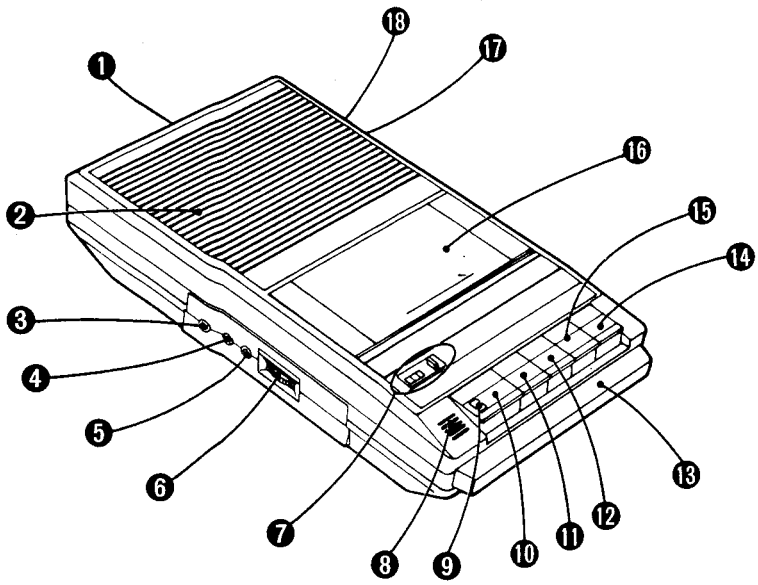
Power Requirement:	Battery; 6V (four "C" size dry batteries) [Z] ..... AC; 220V, 50Hz [E] [L] ... AC; 240V, 50Hz [X] ..... AC; 110−127/220−240V, 50/60Hz
Motor:	Electrical governor motor
Tape Speed:	4.8cm/s
Recording System:	DC bias. Magnet erase
Fast Forward and Rewind Time:	Approx. 90 seconds with C-60 cassette tape
Track System:	2 track monaural recording and playback
Power Consumption:	6W (AC only)
Power Output:	650mW ... RMS (max.)
Input:	MIC; sensitivity 0.25mV/applicable microphone impedance 200Ω~600Ω (φ3.5)
Output:	Monitor; 8Ω (φ3.5)
Frequency Response:	100~7,000Hz
Speaker:	8cm PM dynamic speaker (8Ω)
Dimensions:	139mm(W)×52mm(H)×249mm(D)
Weight:	870g without batteries

Design and specifications are subject to change without notice.

National / Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS



❶ Battery Compartment [Bottom]
❷ Speaker 8cm, 8Ω
❸ Monitor Jack (MONITOR (8 Ω)) φ3.5
❹ Remote Jack (REMOTE)
❺ Microphone Jack (MIC) φ3.5
(0.25mV/200~600Ω)
❻ Volume Control (VOLUME)
❼ Tape Counter and Reset Button
❽ Built-in Microphone (MIC)
❾ Record Button (● RECORD)
❿ Playback Button (▶ PLAY)
⓫ Rewind/Review Button (◀◀ REW/REV)
⓬ Fast Forward/Cue Button (▶▶ FF/CUE)
⓭ Handle
⓮ Pause Button (II PAUSE)
⓯ Stop/Eject Button (■/▲ STOP/EJECT)
⓰ Cassette Compartment
⓱ AC Socket (AC IN) [Side]
⓲ Voltage Selector (VOLTAGE SELECTOR) [Bottom]
(for Asia, Latin America, Middle East and Africa areas.)

DISASSEMBLY INSTRUCTIONS

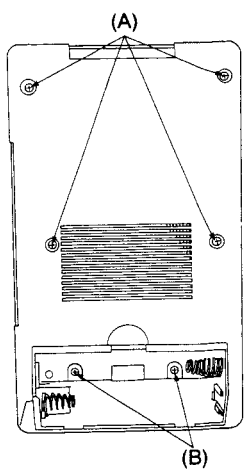


Fig. 1

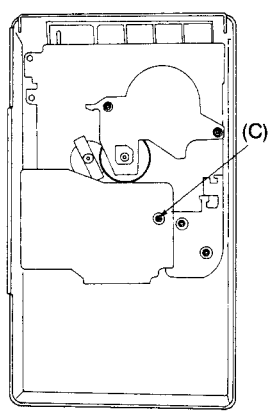


Fig. 2

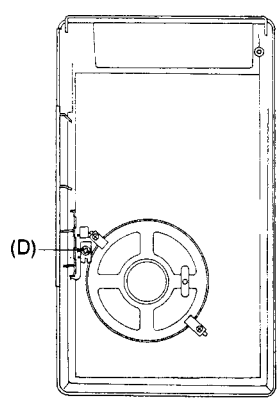


Fig. 3

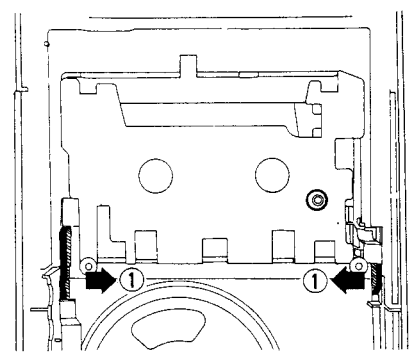


Fig. 4

Ref No.	Shown in Fig. —.	To remove —.	Remove —.
1	1	Main Case	Screw (3×30) mm ..... (A)×4
2			Screw (3×8) mm ..... (B)×2
3	2	Circuit Board	Screw (3×8) mm ..... (C)×1
4	3	Cassette Lid	Screw (3×8) mm ..... (D)×1
5	4		Remove the rib direction of arrows ①.

■ HOW TO FIX THE MOTOR

Remove the three screws E×3 (2.6×8)mm. (See Fig. 5)

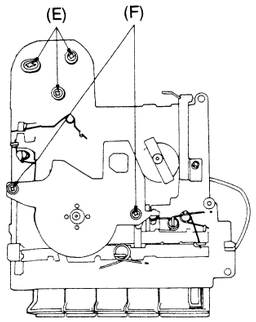


Fig. 5

■ HOW TO FIX THE FLYWHEEL ASS'Y

1. Remove the two screws F×3 (2.6×10)mm and flywheel holding plate ass'y. (See Fig. 5)
2. Pull out the flywheel ass'y in the direction of arrow ②. (See Fig. 6)

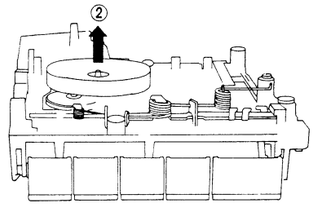


Fig. 6

MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
1. Make sure heads are clean. 2. Make sure capstan and pressure roller are clean. 3. Judgeable room temperature: 20±5°C (68±9°F)	4. Set volume control to maximum.

■ ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Head azimuth	QZZCFM (8kHz, −20dB)	Monitor (8Ω)	Maximum output	Head adjustment screw	Playback Mode (Refer to Fig. 1)
Tape speed	QZZCWAT (3kHz)	Monitor (8Ω)	3000±90Hz	Tape speed adjustment VR	Playback Mode (Refer to Fig. 2)

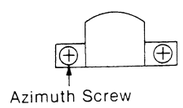


Fig. 1

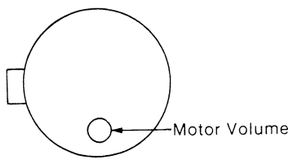
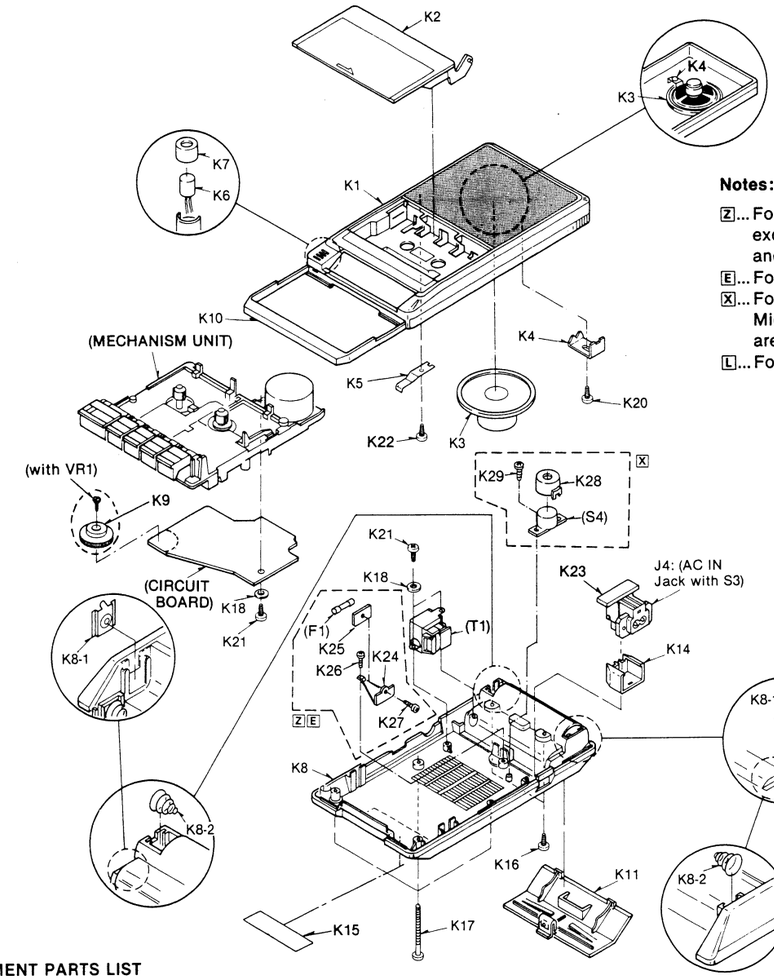


Fig. 2

CABINET PARTS LOCATION



Notes:

Z... For all European areas except United Kingdom and F.R. Germany.
E... For United Kingdom.
X... For Asia, Latin America, Middle East and Africa areas.
L... For Australia.

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
• mark stand for that the parts are supplied in MESA.

Notes:
The letter in the circle after the part name indicates the color of the part.
Ⓚ... Black

Ref. No.	Part No.	Part Name & Description
		CABINET PARTS
•K 1 [Z][E]	**RKM956X**	Main Case Ⓚ
•K 1 [X][L]	**RKM956W**	Main Case Ⓚ
•K 2	**RKG157Z**	Cassette Lid
•K 3	**EAS8P28SE**	Speaker
K 4	**QKT1172**	Speaker Fixing Metal
K 5	**QBPK0074**	Spring (Cassette Lid)
K 6	**WM034ZP**	Condenser Microphone
K 7	**QBG1616**	Mic Cushion
•K 8 [Z]	**RYFQ2104Z**	Bottom Case Ass'y Ⓚ
•K 8 [E][L]	**RYFQ2104E**	Bottom Case Ass'y Ⓚ
•K 8 [X]	**RYFQ2104X**	Bottom Case Ass'y Ⓚ
K 8-1	**QJB0111**	Battery Terminal (+)
K 8-2	**QBN8007**	Battery Spring (−)
•K 9	**QGT4R1414**	Knob, Volume (K)
•K 10	**QKH4R1193**	Handle
•K 11	**QKD4R1216**	Battery Lid Ⓚ
K 14	**RUV482Z**	AC Socket Cover ⚠
•K 15 [Z]	**RGT1209Y**	Main Name Plate
•K 15 [E]	**RGT1209W**	Main Name Plate
•K 15 [X]	**RGT1209X**	Main Name Plate

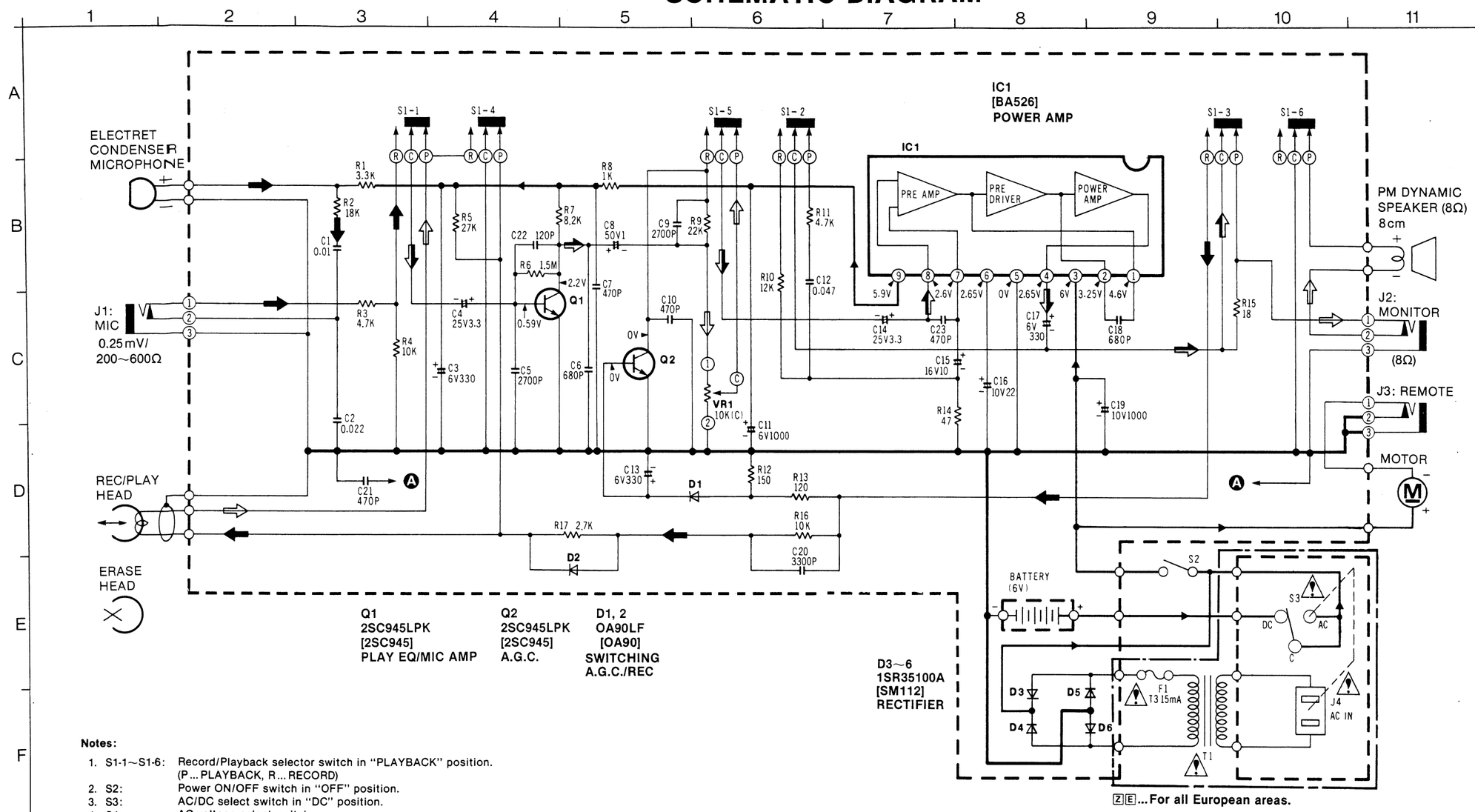
Ref. No.	Part No.	Part Name & Description
•K 15 [L]	**RGT1209V**	Main Name Plate
K 16	**XTN3+8G**	Screw ⊕3×8 (Bottom Case Ass'y M'tg)
K 17	**XTN3+30G**	Screw ⊕3×30 (Bottom Case Ass'y M'tg)
K 18	**XWG3**	Washer φ3 (Transformer, P.C.B. M'tg)
K 20	**XTV3+6G**	Screw ⊕3×6 (Speaker M'tg)
K 21	**XTN3+8B**	Screw ⊕3×8 (Transformer, P.C.B. M'tg)
K 22	**XTV3+8G**	Screw ⊕3×8 (Cassette Lid Spring M'tg)
•K 23	**QJI4R2084RBM**	Circuit Board (Jack)
•K 24 [Z][E]	**QMA4R4757**	Angle, Fuse
K 25 [Z][E]	**QTF1027**	Fuse Holder ⚠
K 26 [Z][E]	**XTN3+6G**	Screw ⊕3×6 (Fuse Angle M'tg)
K 27 [Z][E]	**XSN3+5**	Screw ⊕3×5 (Fuse Holder M'tg)

Ref. No.	Part No.	Part Name & Description
K 28 [X]	**RUV426ZB**	Voltage Selector Switch Cover ⚠
K 29 [X]	**XTN23+8B**	Screw ⊕2.3×8 (Voltage Selector Switch M'tg)
		ACCESSORIES
A 1 [Z]	**RJA20Z**	AC Power Cord ⚠
A 1 [E]	**RJA43Z**	AC Power Cord ⚠
A 1 [X]	**RJA21Z**	AC Power Cord ⚠
A 1 [L]	**RJA26Z**	AC Power Cord ⚠
•A 2 [Z][E]	**RQX4793Z**	Operating Instructions
•A 2 [X][L]	**RQX4794Z**	Operating Instructions
A 3 [X]	**RJP120Z**	AC Plug Adaptor ⚠
		PACKINGS
•P 1 [Z][E]	**RPK2291Z**	Gift Box
•P 1 [X][L]	**RPK2292Z**	Gift Box
•P 2	**QPC4R0125**	Polyethylene Cover (Cushion Type)
•P 3	**QPA4R0732**	Cushion
P 4	**XZB20X30A02**	Polyethylene Cover

▼ Be sure to fold at the (▼) mark so that mark is on the outside.

D

SCHEMATIC DIAGRAM



Q1 2SC945LPK [2SC945] PLAY EQ/MIC AMP

Q2 2SC945LPK [2SC945] A.G.C.

D1, 2 OA90LF [OA90] SWITCHING A.G.C./REC

D3~6 1SR35100A [SM112] RECTIFIER

Notes:

1. S1-1~S1-6: Record/Playback selector switch in "PLAYBACK" position. (P... PLAYBACK, R... RECORD)
2. S2: Power ON/OFF switch in "OFF" position.
3. S3: AC/DC select switch in "DC" position.
4. S4: AC voltage select switch.
   * For Asia, Latin America, Middle East and Africa areas.
5. VR1: Volume control VR.
6. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
7. Battery Current: Playback..... 130mA (VR min.)
   Maximum output
   Playback..... 215mA (VR max.)
   Record..... 132mA
8. Described in schematic diagram are two types of numbers; the supply parts number and production for transistors and diodes. One type number is used for supply parts number and production parts number which they are identical.
   e.g. Q1
   2SC2412NRTB, LNSTB —— Production parts number
   [2SC2412] ———————— Supply parts number
9. The supply parts number is described along in the replacement parts list.
10. Important safety notice
    Components identified by ⚠ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.

- **This schematic diagram may be modified at any time with the development of new technology.**

: Playback Signal Line
: Recording Signal Line
: Main (Recording/Playback) Signal Line
: (+B) Voltage Line
: Earth (GND) Line

Notes:

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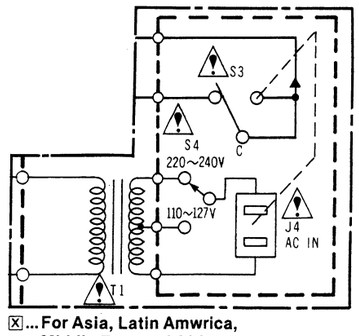
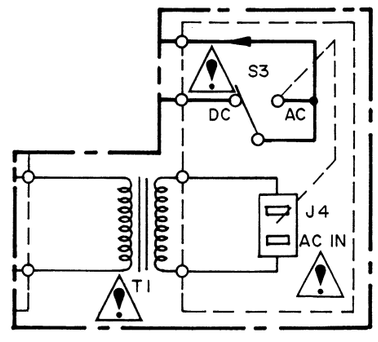
- [E]... For United Kingdom.
- [X]... For Asia, Latin America, Middle East and Africa areas.
- [L]... For Australia.



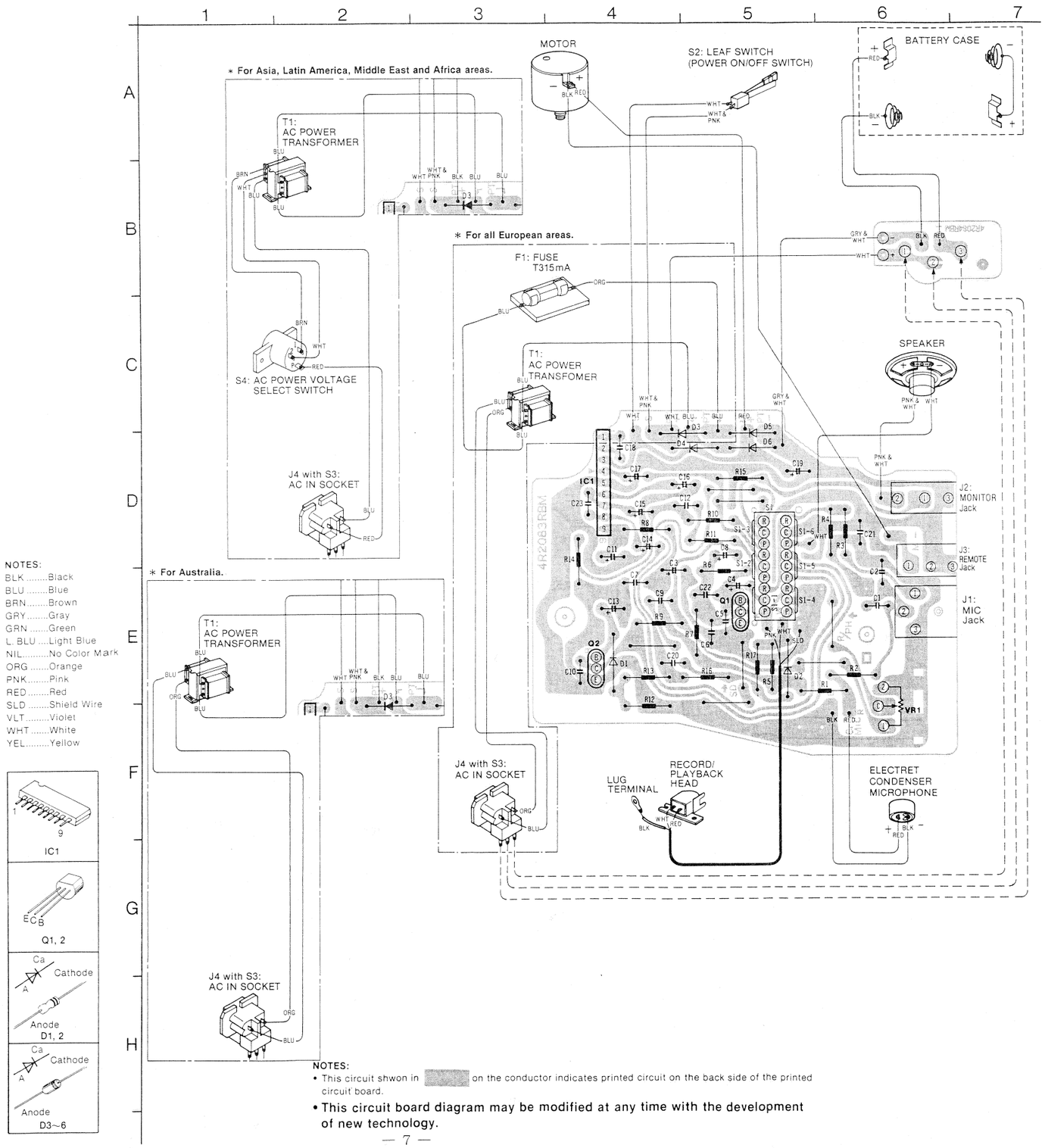
[X]... For Asia, Latin Amwrica, Middle East and Africa areas.



[L]... For Australia.

[Z][E]... For all European areas.

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



NOTES:
BLK .....Black
BLU .....Blue
BRN.....Brown
GRY.....Gray
GRN.....Green
L. BLU ....Light Blue
NIL.....No Color Mark
ORG .....Orange
PNK.....Pink
RED.....Red
SLD .....Shield Wire
VLT.....Violet
WHT .....White
YEL.....Yellow

NOTES:
- This circuit shwon in ▒▒ on the conductor indicates printed circuit on the back side of the printed circuit board.
- **This circuit board diagram may be modified at any time with the development of new technology.**

ELECTRICAL PARTS LIST

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)

ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Resistor Type	Wattage Tolerance
ERD: Carbon	10 : 1/8 W J : ±5%
ERG: Metal Film	12 : 1/2 W
ERX: Metal Film	25 : 1/4 W
ERQ: Fuse Type Metal	1 : 1 W
RRD: Carbon (Chip Type)	18 : 1/8 W

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value (1000 pF)	Tolerance	Peculiarity

ECEA	50	M	R47
Type	Voltage	Peculiarity	Value (0.47 µF)

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA: Electrolytic	0J : 6.3 V	2H : 500 V DC	C : ±0.25 pF
ECCD: Ceramic	1A : 10 V	1 : 100 V	J : ±5%
ECKD: Ceramic	1C : 16 V	DKC : 400 V AC	K : ±10%
ECQM: Polyester	1E : 25 V		Z : +80%, −20%
	1H : 50 V		
ECQP: Polypropylene	1V : 35 V		P : +100%, −0%
	50 : 50 V		
ECET: Electrolytic			
ECEA□□□N: Non Polar	25 : 25 V		
Electrolytic	16 : 16 V		
QCU□: Ceramic (Chip Type)			
ECUX: Ceramic (Chip Type)			

REPLACEMENT PARTS LIST

Important safety notice
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When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUIT		
IC 1	BA526	IC (POWER AMP)
TRANSISTORS		
Q 1, 2	2SC945LP	Transistor (PLAY EQ/MIC AMP, AGC)
DIODES & RECTIFIERS		
D 1, 2	20A90	Diode (SWITCHING)
D 3, 4, 5, 6	1SR35100A	Diode (RECTIFIER)
TRANSFORMERS		
•T 1 [Z]	QLPD91AHV	AC Power Transformer ⚠
•T 1 [E][L]	QLPZ25AHV	AC Power Transformer ⚠
T 1 [X]	QLPN54AHV	AC Power Transformer ⚠
VARIABLE RESISTOR		
VR 1	EVJ56AT12C14	Volume Control/with Screw (10kΩ/C)
FUSE		
F 1 [Z][E]	XBAQ0006	Fuse (T315mA) ⚠
SWITCHES		
S 1	QSS6212	Record/Playback Switch
S 2	QSB0170K	Switch, Power ON/OFF
S 4 [X]	RSR2A01Z	Switch, Voltage Selector ⚠
JACKS		
J 1	QJA0172	Jack, MIC
J 2	RJJ19Y	Jack, Monitor
J 3	QJA0156	Jack, Remote
J 4 [Z][E]	RJJ115Z	Jack, AC IN whit S3 ⚠
J 4 [X][L]	RJJ112Z	Jack, AC IN whit S3 ⚠

Notes:

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[E]... For United Kingdom.
[X]... For Asia, Latin America, Middle East and Africa areas.
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Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS		**CAPACITORS**	
R 1	ERD25FJ332	C 1	ECFDD103MXY
R 2	ERD25TJ183	C 2	ECFDD223MXY
R 3, 11	ERD25FJ472	C 3, 13, 17	ECEA0JU331
R 4, 16	ERD25FJ103	C 4, 14	ECEA1EU3R3
R 5	ERD25TJ273	C 5, 9	ECFDD272MXY
R 6	ERD25TJ155	C 6, 18	ECKD1H681KB
R 7	ERD25FJ822	C 7, 10, 21, 23	ECKD1H471KB
R 8	ERD25FJ102	C 8	ECEA1HU010
R 9	ERD25TJ223	C 11	ECEA0JU102
R 10	ERD25TJ123	C 12	ECFDD473MXY
R 12	ERD25FJ151	C 15	ECEA1CU100
R 13	ERD25FJ121	C 16	ECEA1AU220
R 14	ERD25FJ470	C 19	ECEA1AU102
R 15	ERD25FJ180	C 20	ECKD1H332KX
R 17	ERD25FJ272	C 22	ECKD1H121KB

MECHANISM PARTS & SPRING LOCATION

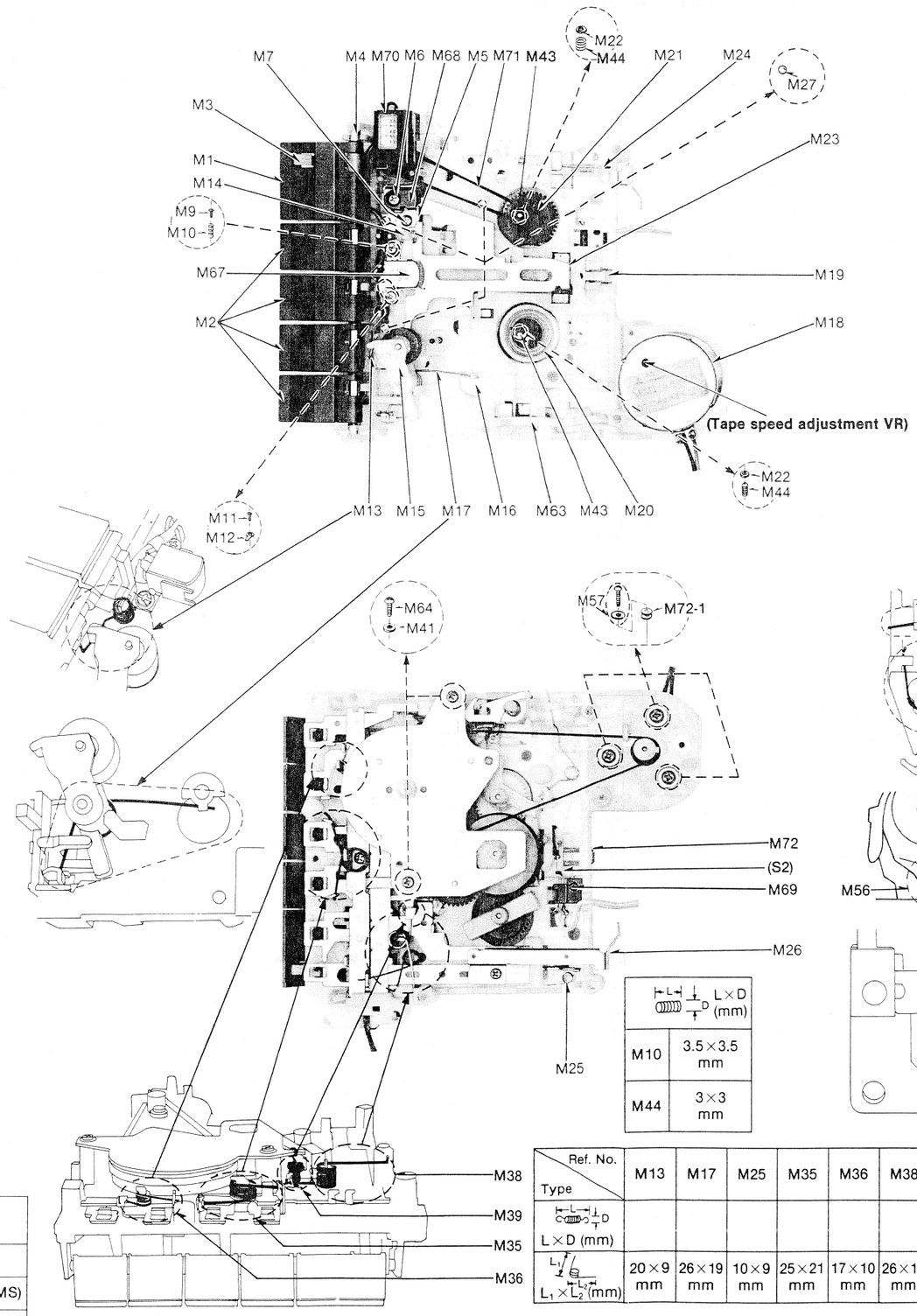
REPLACEMENT PARTS LIST

• mark stands for that the parts are supplied in MESA.

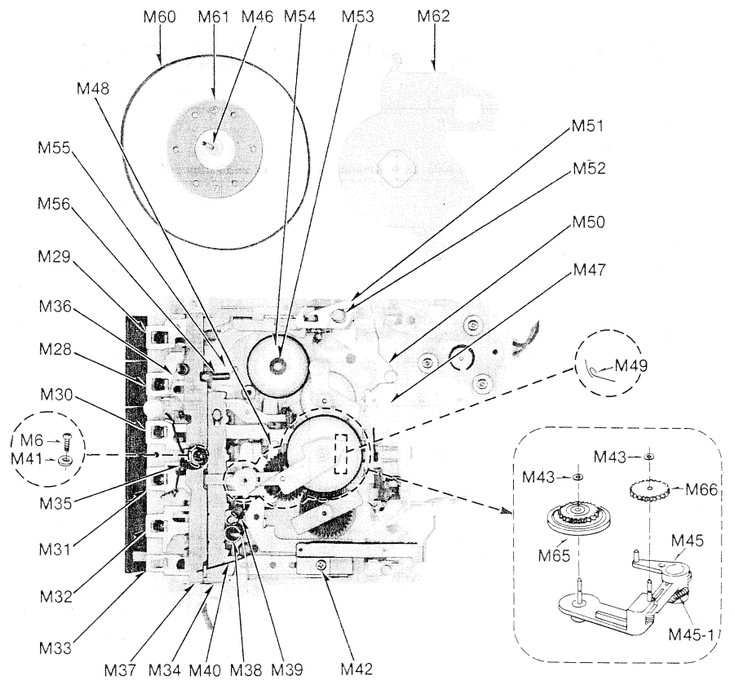
Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
• M 1	QG04R2204	Button, Playback
• M 2	QG04R2203	Button, Operation (REW/REV, FF/CUE, STOP/EJECT, PAUSE)
• M 3	QG04R2205	Button, Record
• M 4	QMN4R2825	Shaft, Button
• M 5	QMG4R0123	Tape Guide
M 6	XTN26 + 8B	Screw ⊕2.6×8 (Erase Head, Rod Pressure Plate M'tg)
M 7	XSN26 + 3	Screw ⊕2.6×3 (Tape Guide M'tg)
M 9	XSB2D5	Screw (Head Adjustment)
• M 10	QBC4R1446	Spring, Head Adjustment
M 11	XSB2D6	Screw (Head M'tg)
M 12	QJT0039	Lug Terminal
• M 13	QBN4R1986	Spring, Pinch Roller
• M 14	QML4R4019	Lever, Auto Stop Detecting
• M 15	QXL4R1625	Pinch Roller Bracket Ass'y
• M 16	QML4R4017	Lever, Idler
• M 17	QBN4R1988	Spring, Idler
• M 18	QXU4R0324	Motor Ass'y
• M 19	QBN4R1987	Spring, Cassette Pressure
• M 20	QXD4R0150	Take-up Reel Table Ass'y
• M 21	QDR4R1171	Supply Reel Table
M 22	QBW0042	Washer (Reel Table M'tg)
• M 23	QXK4R2871	Head Base Plate Ass'y
• M 24	QML4R4021	Lever, Erase Safety
• M 25	QBN4R1783	Spring, Erase Safety Lever
• M 26	QBP4R1990	Spring, Record
M 27	QDK1012	Steel Ball ⌀2.5
• M 28	QMR4R2090	Stop/Eject Rod
• M 29	QMR4R2089	Pause Rod
• M 30	QMR4R2091	F.F Rod
• M 31	QMR4R2092	Rewind Rod
• M 32	QMR4R2093	Playback Rod
• M 33	QMR4R2094	Record Rod
• M 34	QMR4R1783	Lock Rod
• M 35	QBN4R1777	Spring, F.F Rod
• M 36	QBN4R1709	Spring, Stop Rod
• M 37	QMF4R2085	Plate, Rod Pressure
• M 38	QBN4R1776	Spring, Playback Rod
• M 39	QBT4R1972	Spring, Head Base Plate Fixing
• M 40	QBN4R1706	Spring, Record Rod
M 41	XWG26	Washer ⌀2.6 (Rod Pressure Plate, Flywheel Retainer M'tg)
M 42	XTN26 + 4B	Screw ⊕2.6×4 (Record Rod M'tg)
M 43	QBW2008	Washer ⌀2 (Rewind Gear, Reel Table M'tg)
• M 44	QBC4R1447	Spring, Back Tension
• M 45	QXL4R1562	F.F Frame Sub Ass'y
• M 45-1	QBN4R1710	Spring, F.F Frame Sub
M 46	QBW0043	Washer (Capstan M'tg)
• M 47	QML4R3531	Lever, Change
• M 48	QML4R4022	Lever, Cue
• M 49	QBN4R1712	Spring, F.F Sub
• M 50	QBN4R1701	Spring, Change Lever
M 51	QML3528	Lever, Pause Lock
• M 52	QBN4R1705	Spring, Pause Lock
M 53	QBW2046	Washer (Idler M'tg)
• M 54	QXi4R0109	Idler Ass'y
• M 55	QMR4R1784	Auto Stop Driving Rod
• M 56	QBT4R1889	Spring, Auto Stop Driving Rod
• M 57	QHQ1359	Screw (Motor M'tg)
• M 60	QDB4R0337	Belt, Flywheel
• M 61	QXF4R0216	Flywheel Ass'y
• M 62	QXH4R0429	Flywheel Retainer Ass'y
• M 63	QML4R4020	Lever, Cassette Up
M 64	XTN26 + 10B	Screw ⊕2.6×10 (Flywheel Retainer M'tg)
• M 65	QXG4R1045	F.F Pulley Ass'y
• M 66	QDG4R1193	Gear, Rewind
M 67	QWY0120	Record/Playback Head
• M 68	QWY2139S	Erase Head
M 69	XTN2 + 8B	Screw ⊕2×8 (Leaf Switch M'tg)
• M 70	QDC4R0178	Tape Counter
M 71	QDB0268	Belt, Tape Counter
• M 72	QXK4R2711	Mechanism Chassis Ass'y
• M 72-1	QBG4R1420	Cushion, Motor Rubber

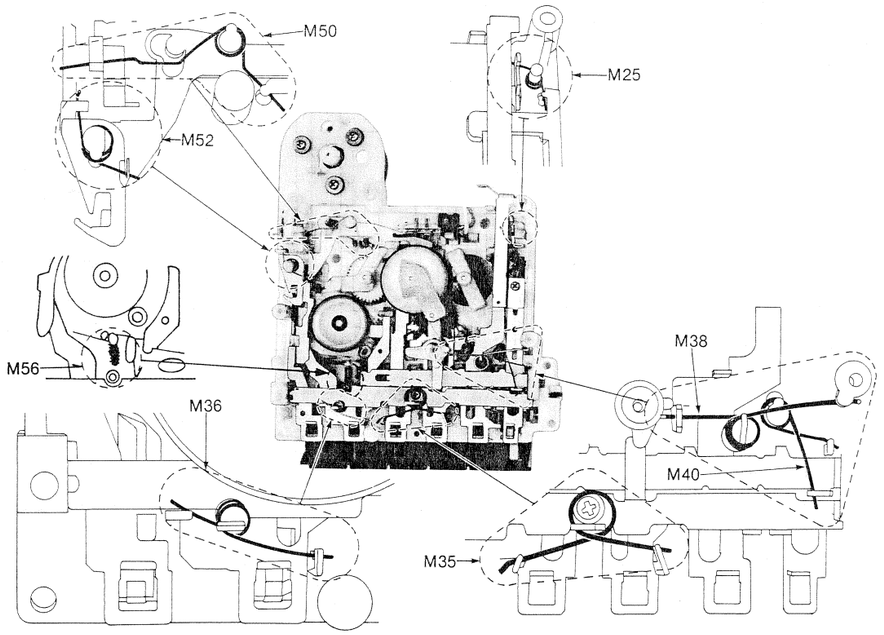
SPECIFICATIONS

Pressure of pressure roller	420±60g
Takeup tension	50±15g-cm
Wow and flutter (JIS)	Less than 0.3% (WRMS)
Tape speed accuracy	±3%



L×D (mm)	
M10	3.5×3.5 mm
M44	3×3 mm





Ref. No. / Type	M13	M17	M25	M35	M36	M38	M39	M40	M45-1	M49	M50	M52	M56
L×D (mm)							20×5 mm						11×3 mm
$L_1 \times L_2$ (mm)	20×9 mm	26×19 mm	10×9 mm	25×21 mm	17×10 mm	26×19 mm		23×12 mm	20×9 mm	11×7 mm	33×18 mm	12×11 mm	

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